THE MUTANTS

DOCTOR WHO

AN ADVENTURE IN SPACE & TIME

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code:NNN ~ Bob Baker & Dave Martin

CMS

We open in the laboratory at UNIT Headquarters, where a black spheroid materialises on the workbench in front of the Doctor and Jo. The Doctor realises he is to be sent on a top-priority mission by the Time Lords, to deliver the spheroid to its intended recipient. The two friends enter the TARDIS and it takes them to a Skybase orbiting the planet Solos, a Thirtieth Century Earth colony.

An Administrator has arrived from Earth to give Solos its long-overdue independence. The Skybase Marshal is set against this and he arranges with Varan, a Solonian warrior chief, to have the Administrator assassinated. The murder is blamed on a young, outspoken Solonian named Ky - Varan's rival. As Ky flees he bumps into the Doctor, and the spheroid partly opens. It is intended for him! Jo hurries after the Solonian who takes her down to Solos - as a hostage. There, he tells her that in daylight the planet's atmosphere is slowly poisonous to humans...

The Doctor urges the Marshal to look for Jo, but the man will only do so if the Time Lord opens the container for him. Reluctantly the Doctor agrees, and he is taken to meet the base scientist, Jaeger. Together they construct a particle reversal machine which the Doctor hopes will enable them to see inside the spheroid. However, the machine blows a fuse before they can study the contents.

On Solos, Ky takes Jo to an abandoned Thaesium mine where he tells her that the 'Overlords' from Earth have been plundering the planet's resources and creating pollution which is turning the Solonians into hideous insect-like Mutants (Mutts). Due to a firestorm the pair head further into the mine, where they are attacked by a group of Mutants. While Ky fights them off, Jo runs deeper into the tunnels and into a strange glowing cavern. There she collapses, observed by a sinister silver figure.

Two Skybase security guards, Stubbs and Cotton, rebelling against the Marshal, help the Doctor and a fugitive Varan to escape to Solos and to the mine, where they find Ky. The Doctor gives Ky the container, which opens. Inside are stone tablets with ancient inscriptions on them. Unimpressed, Varan returns to his village to organise an attack on Skybase. The Doctor in the meantime finds Jo.

The Marshal learns that the Mutants are migrating to the mine in large numbers and he arranges to blow them up. Jaeger believes he can ionise the atmosphere and make Solos habitable for humans.

Stubbs and Cotton find the Doctor and warn him of the Marshal's plan. However, the Marshal knows the two guards have turned against him and he blows up the mine entrances - sealing them all in. The silver figure appears, beckoning to the Doctor and his friends. He takes them to a hidden laboratory where he removes his radiation suit and is revealed to be Sondergaard, an Earth scientist who disappeared years ago. He explains that the entire planet is undergoing a natural transformation, but due to Jaeger's experiments the process has gone drastically wrong.

As the mine begins to collapse the Doctor urges his friends to escape, while he and Sondergaard pore over the tablets. They deduce that the mutations are part of a natural life-cycle and that Thaesium radiation - concentrated in the glowing cavern - plays a vital part in this. The Doctor enters the cavern and finds a large crystal but to analyse it he will need to return to the Skybase lab...

Jo and her party escape from the mine via a ventilation shaft, which leads to Varan's village. There, a mutating Varan captures them and, using them as hostages, gains access to Skybase. His mutating army is killed by the Marshal's men while Varan himself is blown out into space.

Jaeger launches his ionisation rockets but they malfunction and explode on the surface of Solos, contaminating the soil. On returning to Skybase, the Doctor is captured and blackmailed to help solve this problem by the Marshal threatening Jo's life. Jo, meanwhile, frees herself and the others and warns the approaching Earth Investigator of the Marshal's aims, though Stubbs is killed when the Marshal recaptures them. They are imprisoned once more and the Doctor is forced to tell the Investigator exactly what the Marshal wishes him to hear. Again Jo and her party escape and the tables are turned on the Marshal; until Sondergaard arrives with a Mutant. The Marshal kills the creature and the investigator, disgusted by its appearance, gives the man full control.

Ky falls ill, but when Sondergaard gives him the crystal from the cavern a complete metamorphosis overtakes him, transforming him first into a Mutant and then into the ultimate Solonian form - a glowing, floating superbeing.

The Doctor sabotages the machine that will give Solos an Earth atmosphere, which kills Jaeger. The Marshal attempts to shoot the Doctor but is vapourised by Ky. Their mission complete, the Doctor and Jo leave in the TARDIS.

(On 1 Shot 25) -12-

Widen to 3s DR./JO/INVESTIG.TOR
PAN DR. to 2s DR./INVESTIG.TOR
CAMERA A. to 2s 3s DR./JAEGER/MARSHAL/JO/INVESTIG.TOR
Tighten to 2s JAEGER/MARSHAL

DOCTOR WHO: Kept hostage to ensure my cooperation in this...travesty of justice. Investigator I accuse that man - and that man.

(POINTING FIRST TO JAEGER, THEN TO THE MARSHAL)

of the most callous and brutal series of crimes against a defenceless people it has ever been my experience to encounter!

(JAEGER GOES UP TO MARSHAL)

(FLOATER IN AT 'F')

5a C1 2A

26. 5 B — 8. INT. GROUND TRANSFER STATION. D.Y. MUSIC 3
MS Corridor. SONDERGAARD in. Pan him R.

(DESERTED AT FIRST. THEN SONDERGAARD APPEARS. HE TRIES TO ENCOURAGE THE NUTTS TO ENTER... THEY ARE BOTH FRIGHTENED AND AGGRESSIVE:)

27. 2 A — Group & booth

SONDERGAARD: See there is nothing to fear -

(HE TRIES TO PULL THEM IN: THEY SHOVE HIM OFF)

Look - I cannot help until I find the Doctor...

(THEY ARE STILL ROCKING AWAY NERVOUSLY: SONDERGAARD PRETENDS TO GIVE UP...)

Very well. I shall go alone. And you will stay as you are now - forever.

(4 NEXT) -12-

(On 2 Shot 27) -13-

28. 4 A — 3s JO/MARSHAL/DR. — 9. INT. SKYR.L... MARSHAL'S OFFICE. D.Y.

(DOCTOR WHO ACCUSING THE MARSHAL)

DOCTOR WHO: You destroyed those poor creatures for no reason at all.

MARSHAL: They would all have died anyway!

DOCTOR WHO: Not died - changed -

MARSHAL: It was my duty, my duty to save Solos from contamination -

DOCTOR WHO: Duty! Your idea of duty was to save the planet for yourself -

29. 3 B — CU MARSHAL. Pan him up & tighten to ECU. — MARSHAL: They are mutants - mutts! they are diseased, They must be wiped off the face of the planet!

30. 4 A — CU DR.

(SILENCE: WE REALISE DOCTOR WHO/H.S DELIBERATELY PROVOKED THIS OUTBURST FROM THE MARSHAL: HE STANDS CONDEMNED OUT OF HIS OWN MOUTH:)

31. 1 B — VLS Dr. to INVESTIGATOR PAN INVESTIGATOR to his ADVISERS Stop MY L. COTTON in b/g

(TURNS & WALKS TO HIM)

DOCTOR WHO: Need I say more Investigator? (HE RETURNS TO JO)

(THE INVESTIG.TOR CONFERS WITH HIS SCIENTIFIC ADVISER. THEN TO DOCTOR WHO:)

32. 2 B — C2s JAEGER/MARSHAL
33. 4 A — C2s JO/DR.
34. 1 B — MS PAN INVESTIG.TOR to 2s DR/JO/L.

(4 NEXT) -13-

(On 1 Shot 34) -14-

INVESTIG.TOR: Can you prove your assertion Doctor? Perhaps we could see these 'tablets' you mention?

Tighten to MS DR.

DOCTOR WHO: Yes, of course...

(DOCTOR WHO REACHES INSIDE HIS COAT, STOPS SHORT.)

INVESTIG.TOR: Well?

DOCTOR WHO: The tablets are in the care of Professor Sondergaard/

35. 4 A — 3s JO/DR./INVESTIG.TOR

INVESTIG.TOR: Ah yes... you mentioned him in your statement. Where is Professor Sondergaard now.

DOCTOR WHO: I'm not sure. Somewhere on the surface of Solos.

INVESTIG.TOR: I see...and your other proofs that these mutations are not harmful?/

36. 1 B — CU DR.

37. 3 B — MARSHAL. PAN HIM to 3s MARSHAL/JO/DR.

DOCTOR WHO: I can only repeat -

(COMING DOWN FAST)

MARSHAL: He can prove nothing - nothing!

DOCTOR WHO: Conclusive evidence exists -

(1 NEXT) -14-

(On 3 Shot 37) - 15 -

38. 1 B — Group MARSHAL to INVESTIG.TOR

MARSHAL: Where? Where is yourproof?

DOCTOR WHO: This present mutation is one of a series of adaptive changes. Solos is moving out of spring into summer. That is why the Solonians are changing,

Widen to Group MARSHAL to DR.

(THE DOORS BURST OPEN ONCE MORE: ENTER SONDERGAARD IN CHARGE OF ONE OF THE INVESTIG.TOR'S GUARDS:)

39. 3 B — MS SONDERGAARD. PAN HIM to Group

INVESTIG.TOR: What is the meaning of this interruption? Who is this man?

(DOCTOR WHO RECOVERS HIMSELF)

40. 1 B — C2s DR./SONDERGAARD/INVESTIG.TOR Group as to 2s SONDERGAARD/INVESTIGATOR

DOCTOR WHO: Investigator, this is Professor Sondergaard. He has lived and worked on Solos for many years. He can tell you better than I what the Marshal has been doing there.

SONDERGAARD: Doctor - I do not understand. What is happening here?

(HE LOOKS AT THE 'TAIL' IN AMAZEMENT)

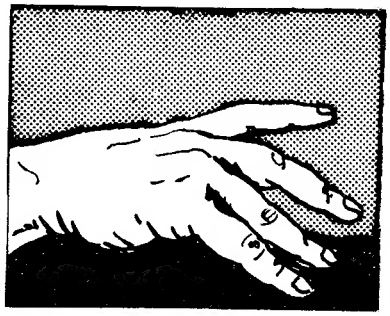
DOCTOR WHO: We're holding a much needed investigation.

SONDERGAARD: (PULLING HIMSELF TOGETHER) Ah yes - I am sure - The doctor must have told you of our work in the cave. He will have told you that we now realise what has caused so many of these mutations

41. 3 B (cradled L.) — CU INVESTIG.TOR — to go wrong -

(1 NEXT) - 15 -

REPRODUCED BY ARRANGEMENT WITH BBCtv

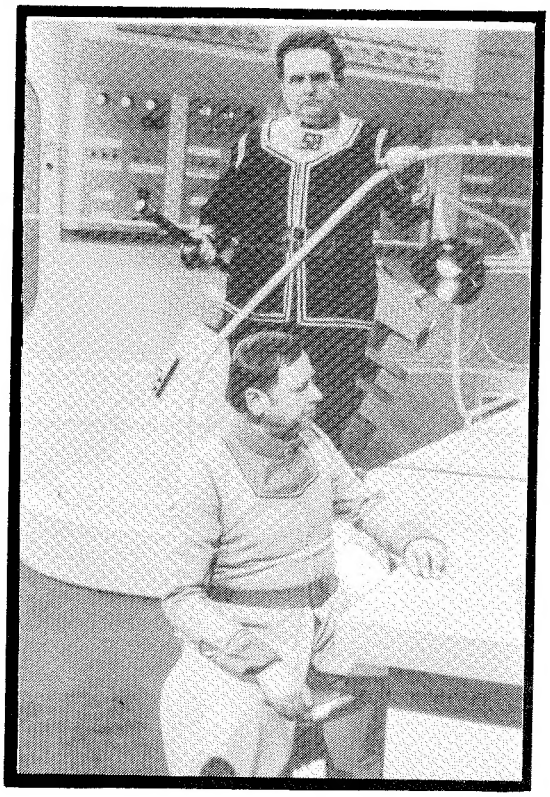


SEALED ORDERS

David Auger

They are hunched forward like old men, taking short steps with a shuffling gait. They twitch constantly and their eyes have that soulful expression which is commonly associated with the very old or those who are terminally ill. Their skin is hard and layered. A grotesquely ribbed backbone creeps up from their cocoon-shaped abdomens and reaches their faces, where protruding mandibles mark each corner of the mouth. Hands that are long and claw-like snatch at the air around them, expressing the frustration of creatures who remember that they were once men but are now not even the remotest parody of the human form. The Solonian mutants are not dissimilar to the insects one might unthinkingly crush underfoot. It is difficult to imagine that these pathetic creatures are just one metamorphosis away from becoming super-beings.

In the estimation of the Marshal of Solos, the mutations are a pest who are as much of a nuisance as the ants who might invade a larder. More importantly, the Mutts are a constant reminder of the consequences of his attempts to transform the atmosphere of Solos into one more easily breathed by humans. Because of this, the Marshal has grown to hate and despise the mutants and uses them to give vent to the more sadistic side of his nature. Ruthlessly he hunts them down as if they were prey in a blood sport and such is his zeal for the hunt, that he will track down and murder any Solonian native who exhibits the early signs of the mutation. It is a scene of horror when the ribbed backbone of a Solonian has broken through the clothing and glistens in the half-light of Solos.

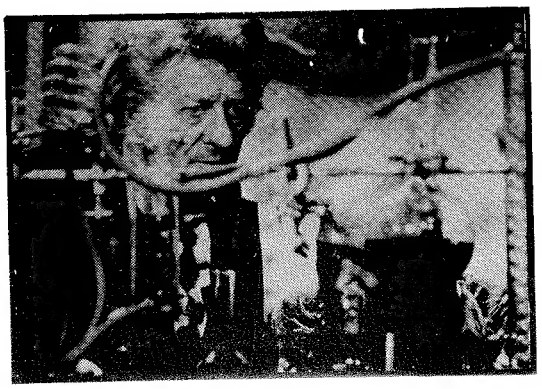


The Marshal's practices are regarded with distaste by his subordinates, but such is his power that no-one dares to question him. Even if any of his minions did have the courage to challenge him, the apathy which is so prevalent among all the Skybase soldiers would deter the majority of them from taking any action at all. The only notion that is of interest to them is their common yearning to return to Earth. The soldiers of Skybase belong to a race which has achieved great victories but can no longer find any satisfactory challenges in the galaxy and has elected to rest on its laurels, slipping into a slow but certain decline. As the Doctor remarks to Jo, it is a state of affairs which is similar to the rise and fall of the Roman Empire on ancient Earth. The Administrator reflects on the situation in a more topical vein: "Earth is exhausted ... politically, economically, biologically finished." Indeed it is only protocol which prompts the Earth Council into taking any interest in a galactic backwater like Solos.

The Marshal is a man who has benefited from this decline in Earth's fortunes. He is ultimately revealed to be a person of little talent or ability who achieved his success in the light of his superiors' disinterest. However, the Administrator seems aware of the Marshal's lack of any positive qualities. He suggests that after Solos has been given independence, the Marshal might find suitable employment as a clerk in the Bureau of Records. It is a prospect which horrifies the Marshal, who has become accustomed to governing Solos as if he was a seventeenth century country squire. No longer will he be able to exercise such absolute authority and his desire to retain his power provides him with the strongest motivation of any of the characters in the story.

Like many stories of the early Seventies, 'The Mutants' is very much a morality play. As well as forecasting a climate of political stagnation, it elaborates upon a theme which had been previously explored in 'Colony in Space'. 'The Mutants' paints a picture of an Earth which has sunk into an industrial abyss. It is a vision which is in stark contrast to the magnificent future so often portrayed in the earlier episodes of 'Doctor Who', but these programmes belonged to a decade of optimistic hopes and sometimes rather naive aspirations. When Doctor Who describes that future Earth, his character is reflecting the new-found cynicism which had banished the Sixties' euphoria as a chimera of impossible dreams: "The Earth these people now know ... is all grey and misty. Land and sea alike, all grey. Grey cities linked by grey highways across grey deserts ... Slag, ash, clinker: the fruits of technology!" If the damage inflicted upon the Solonian environment is any indication of Mankind's influence, this industrial poison must be the Earth's biggest export to the galaxy.

The strongest message that permeates 'The Mutants' provides us



with the first major political statement to be expressed through a 'Doctor Who' story. 'The Mutants' has intentional allusions to apartheid, the social and political doctrine that segregates the black, white and coloured populations of the Republic of South Africa. Bob Baker and Dave Martin wanted their message to be more pronounced by naming the mutants 'Munts'; a derogatory term applied to the black majority by the white rulers of South Africa. This was seemed to be too controversial and the less-offensive noun 'Mutts' was used, but despite this caution on behalf of the BBC the message was still there for those astute enough to see through the layers of plotting which can sometimes obscure an original idea. The most notable reference to the troubles in South Africa was a direct allusion to apartheid itself. The matter transporter recepticals which allow the characters to travel instantaneously from Skybase to the surface of Solos are clearly labelled for use by either "Solonians" or the human "Overlords". In South Africa, apartheid does not allow whites and blacks to use the same train compartments or other social amenities. Other comparisons are less noticable unless one considers carefully. With his vitreous hatred of the Mutts and his unwillingness to accept the creatures as anything but pariahs, the Marshal has an outlook that is not too dissimilar to the intransigent stance of the Afrikaner population. The Afrikaans are descendants of the original Dutch settlers in South Africa and are the whites who most vigorously oppose any dismantling of apartheid. The charismatic Sondergaard and, to a lesser extent, Stubbs and Cotton, who help the Doctor in his fight against the squire of Solos, can be seen to represent the more liberal elements in South African politics.

One of the strongest cards the South African regime has to play in its attempts to retain control is its ability to divide the opposition and turn one side against the other. The Marshal has adopted the same philosophy on Solos by bestowing his patronage on Varan. Ky, the ruler of a rival Solonian tribe, argues for a united front against the Overlords. Because he has been bought by the Marshal, Varan realises that his own position would no longer be tenable if he allied with Ky. Apart from being a matter of personal pride, Varan knows that his lesser intellect would make him very much a junior partner. The Marshal's policy of divide and conquer is so successful that even Ky is prone to blend his overtures to Varan with taunts and insults which push the two Solonian leaders further apart. Like the blacks in South Africa, the Solonians are too concerned with inter-tribal squabbling to organise themselves effectively. They are caught in a situation which requires a catalyst to enable them to dispense with their differences and light the path to freedom.

It is ironic that even though this catalyst is in the Doctor bearing a sealed container from the Time Lords, the ultimate power to free Solos is within the Solonians themselves, its memory forgotten through the passage of time. The early manifestation of this dormant force is the very mutations which both Solonians and Overlords alike have mistaken for a disease.

The Solonian life cycle is a piece of imaginative storytelling on behalf of the two writers, although its inspiration could be none simpler. The life cycle is no more than an extrapolation of the different phases which a certain organism passes through on its evolution into a butterfly. However, when it is finally diagnosed and explained to the viewer, it still leaves an intriguing question unanswered. The mutations are akin to the chrysalis stage of the butterfly with the Solonian natives representing the preceding caterpillar phase. As with most things in life, things come full circle and the Solonian cycle is presumably no exception to this natural law. Once the Solonians have achieved their super-being status, they must be faced with the inevitable prospect that they will once again descend into barbarism. This being the case, are the Solonians not endowed with the powers needed to break the cycle and retain their exalted position? Evidently not, as the relics of the "old ones" suggest that the cycle has indeed turned once, or many times before. Perhaps the super-beings are blessed with a wisdom which is sadly lacking in the Overlords who have interfered with the natural processes so much as to desolate their own world...

If the Solonians do possess that insight, they are truly super beings indeed.

SPACE & TIME

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SPACE & TIME

PRODUCTION OFFICE

Jeremy Bentham

WITH ACKNOWLEDGEMENTS TO LINDA KING

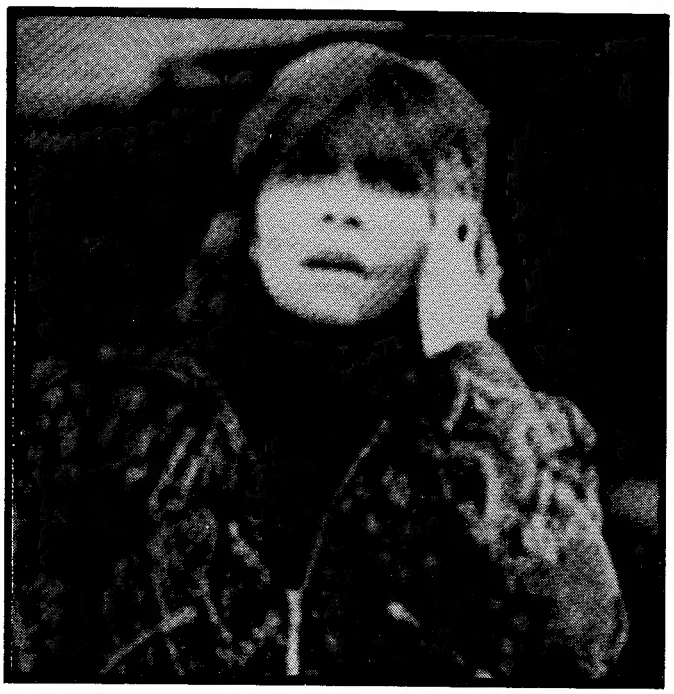
The undeniable empathy between Producer Barry Letts and Script Editor Terrance Dicks was very evident in their crafting of 'The Mutants', in that it enabled them both to explore issues close to their hearts.

The harming of the environment and the hazards associated with pollution are two matters guaranteed to provoke comment from Letts, who has very strong views on Man's mistreatment of the Earth. The 'Doomwatch' series devised by Kit Pedler and Gerry Davis had shown that it was possible to air environmental issues against a present day drama background and Letts was keen to take the idea one stage further by showing, through the medium of 'Doctor Who', the implications of wholescale pollution for some future society.

Terrance Dicks, on the other hand, held equally strong views on the subject of colonialism, and in particular 19th Century colonialism with its history of backward countries being sacked of their natural resources by jingoistic powers showing little or no concern for the rights of the indigenous population. This topic had already been touched upon in the previous season via 'Colony in Space' (Serial "HHH"), but Dicks felt there was much more that could be said on the subject.

Letts and Dicks discussed these ideas with Bob Baker and Dave Martin, the Bristol-based writers who had come into 'Doctor Who' almost by accident and had been bombarding the Production Office with story suggestions ever since their initial success with 'The Claws of Axos' (Serial "GGG"). The writers were briefed to prepare a six-part treatment polarising the extremes of colonialism and pollution, taking as their theme the ruthless exploitation of a once rich, fertile planet which has left it a mass of "...slag, ash and clinker"; the 'fruits of technology' and a fulfillment of the warnings presented in 'Colony in Space'.

Striving to find a reason for the Doctor's involvement, Letts, consciously or otherwise, recalled a 'Doctor Who' storyline he had written and submitted to Script Editor Gerry Davis back in 1966. The title of that storyline was 'The Mutant' and it took as its central idea a butterfly-like creature which is revealed in its final, splendid form only at the end of the story after going through several hideous pupal stages of metamorphosis beforehand.



Inspired by the concepts outlined, Baker and Martin turned in six scripts which Letts considered to be among the finest of his tenure as Producer. They adhered to the standard formula for the series but were much more hard-hitting than usual. The Earth Overlords to Solos were stylised more along Nazi Germany lines than Victorian England, and one of the strongest messages of the story - which Dave Martin had been particularly keen to bring out - was its comment on the South African 'separate development' system of Apartheid (see pages "63-05" and "63-06").

The Overlord regime was painted as a militaristic one with almost all of the central characters portrayed as soldiers. Top of the list was the Marshal whose fierce desire for colonial expansion was linked to a scheme to commit genocide against the mutant native population of the planet Solos. The character was even given a propensity towards Nazi-esque dabblings in scientific experimentation and was certainly not averse to indulging in political assassination to achieve his ends.

At the other end of the scale were the rank-and-file characters of Stubbs and Cotton, two genial comrades representing those who 'just follow orders' - initially at least - and on whose unstinting loyalty the Marshal relies. Baker and Martin drafted Stubbs and Cotton as North Countrymen. Bob Baker recalls being quite astonished when casting resulted in Cotton becoming black. Neither he nor Dave Martin had envisaged him as such:

"Very often you try to distill a character before you write it. You find out the type of character it's going to be and you quite often think so-and-so could play it. Even if he doesn't eventually play it at least you know who you are writing about... By this method the casting person or the producer will have an idea of the character you meant.

"In 'Doctor Who', which is a constant, moving-along production, where everything is madly done at a tremendous pace, they get who they can really. You do try to give an idea if it's an important part, but as for the other parts...

"In 'The Mutants' Cotton was written to be totally North Country. He turned up on the screen as a West Indian trying to get around the awful accent and not having the accent at all. Now if we had known he was going to be black we would have written for him as such from the dialogue point."

Casting in this instance was under the supervision of experienced 'Doctor Who' Director Christopher Barry whom Letts had persuaded to do the story after the success of 'The Daemons' (Serial "JJJ"). The script called for a lot of technical effects and had a fair provision for location filming - two fields easily within the scope of this very accomplished Director.

Christopher Barry, though, had doubts about the overtly satirical nature of the script and decided ultimately to play down its social comment in favour of the science fiction yarn content. He explains:

"It was supposed to be a satire on the British Empire, but we played it down because I don't think that 'Doctor Who' is really the place for such obvious political comment."

Neither Bob Baker nor Dave Martin attended any of the rehearsals for 'The Mutants' and they were consequently quite surprised by the changes when they saw the finished product on screen. Nevertheless, Bob Baker still remembers this as his favourite contribution to 'Doctor Who', "mainly because it had a good strong story over the six parts and contained, I feel, some fairly strong comments about 'Empire' and the Viet Nam War".

SPLITTING IMAGE

Jeremy Bentham

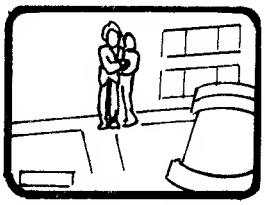


FIGURE 1

FIGURE 2

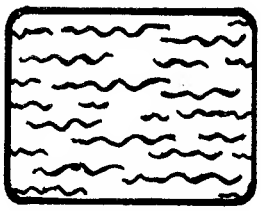
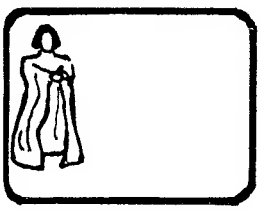


FIGURE 3



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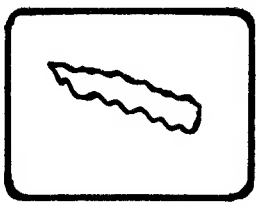

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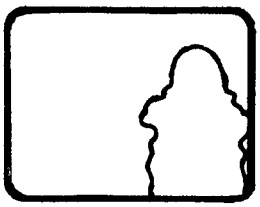

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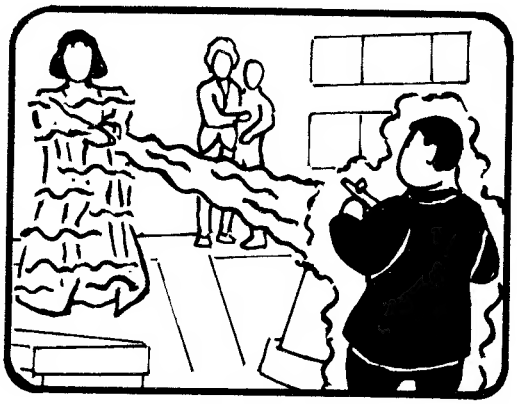


FIGURE 7

Director Christopher Barry remembers 'The Mutants' posing one of the most daunting technical challenges of his career. This involved pushing back the frontiers of CSO technology to extend its capabilities beyond the simple matting of one shot onto another.

The key to this advance was a new mixing desk which allowed multiple feeds from CSO sources into a finished composite picture. Whereas before only one source could be handled at a time - analogous to conventional Inlay and Overlay (see 'The Mind Robber' (Serial "UU"), page "45-08") - the new facility allowed for up to five feeds to be combined simultaneously. The skill came in planning the shots.

Previously, blue had been the main CSO key colour (see 'The Mind of Evil' (Serial "FFF"), page "56-09"). With multiple image feeding, however, other key colours such as red and yellow needed to be taken into account, making it necessary to exclude these as well from the sets and costumes being shot. This was one reason why Designer Jeremy Bear and Costume Designer James Acheson opted to use basically neutral colours on this story (see page "63-09").

Another new facility available on 'The Mutants' was a colour synthesiser: an electronic device for generating anything from flat primaries to changing patterns of colour onto a screen.

The earliest shot in the story to use both multiple-feed CSO and the colour synthesiser was the materialisation of the Time Lords' container in the UNIT lab in episode one. Unlike a standard rollback-and-mix effect (merging just two images, TARDIS-style), Christopher Barry CSO-faded in a picture of the container (shot against a blue background) plus the output from a camera pointed at the colour synthesiser screen. A yellow mask with a circular hole cut out was placed over the screen, such that when the camera was keyed not to see yellow the finished image showed the UNIT lab, the fading in box and a fading in circle of radiation around the box. Furthermore, by de-focusing the yellow-keyed camera's picture, the bright, hard-edged circle of light from the synthesiser could be modified into a soft halo.

As with conventional CSO, great care had to be taken in lining up the shots to ensure that the perspectives and sizes of the various picture components looked right. A further complication was the need for a subsequent recording break in which the real container could be placed in position on the lab bench. Nevertheless this technique achieved relatively quickly and cheaply the sort of illusion it would have taken 'Star Trek' many years and hundreds of dollars to do on film with Triple Head Printers.

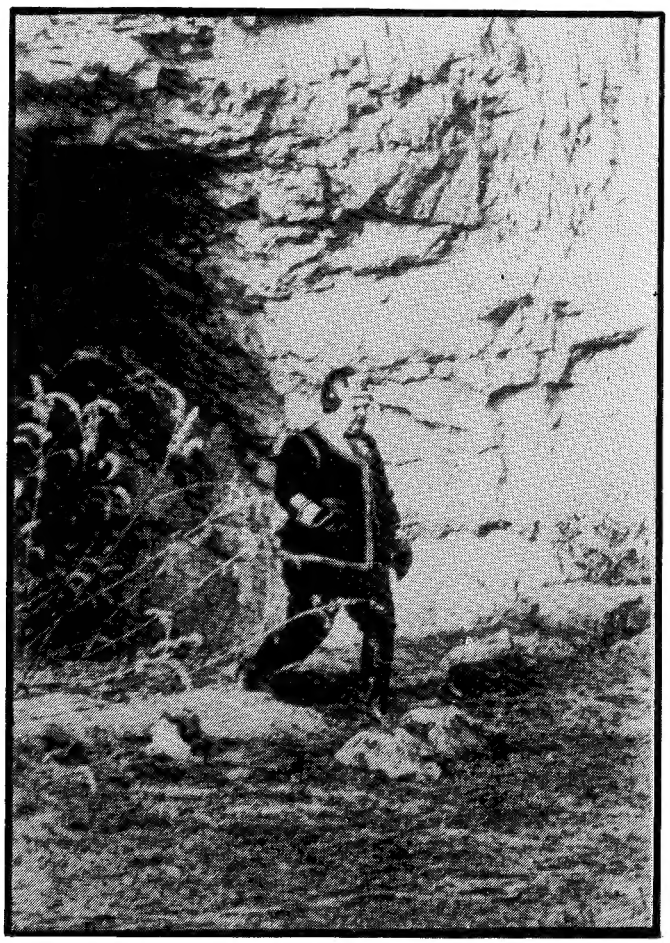
The episode six transformation of Ky into 'SuperKy' (sic) was achieved by mixing the output from no less than five cameras, but even this was not as complex as the later shot where 'SuperKy' materialises in a halo of coloured radiation and fires a bolt of energy at the Marshal, who vanishes in a glow of white light. So tricky was this that Christopher Barry had studio time set aside after episode three's recording to test out his ideas. A full costume test was arranged for Garrick Hagon in his 'SuperKy' gown and precise floor markings were mapped out for cast and cameras.

For the actual 'take' the background set was Jaeger's lab with the Doctor and the Investigator by the door (see Figure 1). The Marshal (Paul Whitsun-Jones) was standing against a blue drape to one side, shot by a second camera (Figure 2). He had to be holding his gun at such an angle that when matted into the background he appeared to be aiming at the Doctor. The Inlay camera up in the Gallery was pointed at the colour synthesiser, which showed a pattern of colour swirls (Figure 3), and this was overlaid on a picture of Ky, shot against a yellow drape by a third studio camera (Figure 4). Another CSO image was then added, showing the energy beam between Ky and the Marshal - in truth a masked-off white caption card made to pulsate by electronic treatment of the picture (Figure 5). Then the output from a fifth camera was faded in. This was trained on a white screen masked off with a cut out shape resembling the Marshal (Figure 6). The final composite, seen for just split seconds by the viewer, is shown at Figure 7. The image of the Marshal was then faded out as the camera shooting the 'Marshal mask' was made to 'bleach out'. Finally, the energy bolt had to be faded out, followed by the Marshal's 'death glow' and then the twin composite of Ky plus the synthesiser overlay.

The art of 'Doctor Who's science had moved on yet again...

"SLAG, ASH AND CLINKER"

Susan James



For technical reasons (see page "63-08") and commensurate with the script's references to a world of "slag, ash and clinker", set Designer Jeremy Bear and Costume Designer James Acheson decided to make 'The Mutants' a 'grey-looking' show by using dull, neutral colours in their designs.

Apart from the briefly-seen hydroponic area with its lush green plants the Skybase sets were basically white, relying on lighting for any tone and substance required. Complementing this train of thought, James Acheson planned his costumes using largely black and white materials. The Marshal and his guards were given black military uniforms decorated with silver piping, complete with visored helmets (as pictured left). They also wore silver oxygen masks when on the surface of Solos because of the planet's poisonous atmosphere. The other humans seen in the story - Jaeger, the Administrator and the Investigator and his men - were garbed in white and various shades of brown, although the Investigator and his aides sported striking golden headpieces to denote their status. The Mutts, meanwhile, were a neutral battleship grey, and even Jon Pertwee's Doctor had to forgo his customary bright colours in favour of darker attire more akin to the clothes he wore in his first year.

Only the Solonian natives and Sondergaard (John Hollis) - the Earth scientist who had fled from the Skybase and set up a secret laboratory on Solos - were allowed a dash of colour in their costumes, but even here the emphasis was on darker browns and beiges.

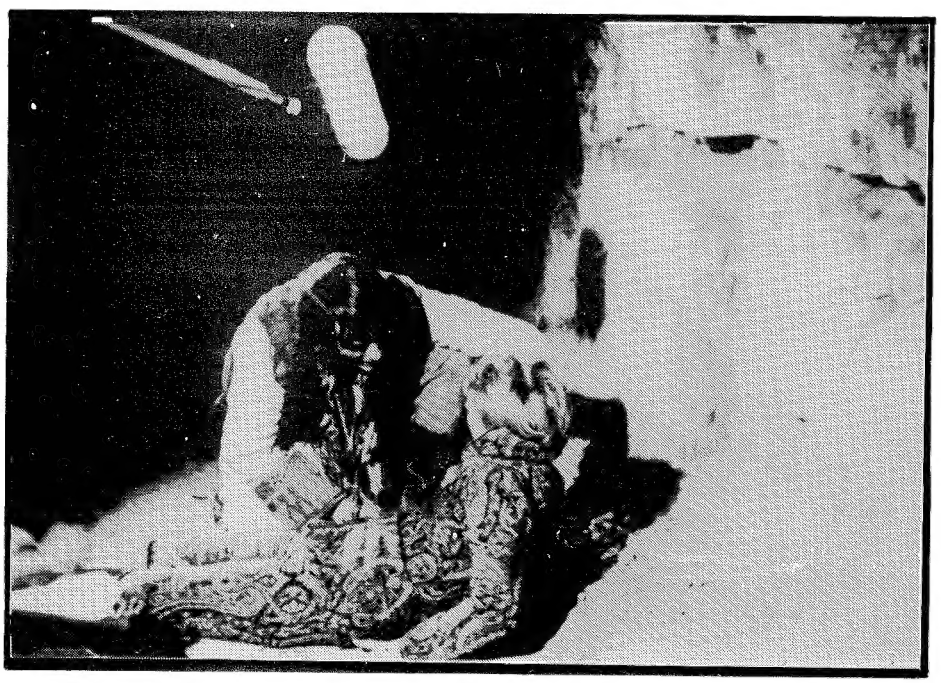
As pictured right, John Hollis has some last-minute - and apparently rather painful! - alterations made to his costume on location.

Filming for this story took place over one week at two suitably gaunt, ashen locations in Kent: the chalk quarries near Gravesend, and the Chislehurst caves - where Katy Manning clearly made a new friend!

Production Assistants Fiona Cumming and Chris D'Oyly-John were charged with importing a lorry full of dried bracken and reeds to make the landscape look less like Kent and more like an alien planet.

The illusion of an alien planet was furthur enhanced by the heavy use of dry-ice and smoke to create the Solos smog, the lighting of which Christopher Barry was particularly proud.

Pictured right, Ky (Garrick Hagon) carries Jo (Katy Manning) across the surface of Solos. This was a useful plot device as Katy Manning had very poor eyesight and found it difficult to walk on rough ground without tripping and falling over.



Extensive filming took place actually inside Chislehurst caves. For these scenes, strange alien symbols were painted on the cave walls and large quantities of glitter were applied to give the place an eerie, other-worldly appearance. This 'decor' was not removed when the unit packed up and left at the end of the week's filming, so for years afterwards the caves' tour guides were able to show parties of visitors these 'mementos' of the filming!

TECHNICAL NOTES

Jeremy Bentham

The lure of working on this somewhat experimental 'Doctor Who' production (see page "63-08") overcame Christopher Barry's trepidation about being typecast as a "'Doctor Who' Director". But in accepting the project he asked for, and got, a few extras to the studio facilities normally available on the show. In the main these 'extras' revolved around the editing session, an element which Barry felt was particularly important on this serial. If any of the experiments failed, slick editing could hide some of the 'obvious seams'. And if they were successful, then good editing would enhance the production still further.

Thus, during each live studio session Barry had made his own 'Shibaden' video recording of the day's shooting. A Shibaden recorder was the first roughly portable video machine. About the size of a trunk suitcase, these machines used reel-to-reel tape and to edit their recordings it was necessary physically to cut and rejoin the lengths of mylar tape. Nevertheless, armed with a Shibaden tape, Christopher Barry could more or less do his own editing without recourse to booking time in a full VT editing suite. So with episodes one and two, for example, recording took place on February 28th and 29th 1972, then Barry booked Shibaden pre-edit time on March 3rd to edit his copies roughly into the sequence of shots he required, before doing the formal VT edit (using the 2" master recordings) the next day. By this technique the expense of editing such an effects-bound show could be reduced as most of the shot sequences and timings had only to be taken off the Shibaden copy by the VT Editor.

Much of the soundtrack was similarly laid down in post-recording dub sessions at the BBC's Spur Sound Studio; rehearsal for episodes one and two being on March 22nd, actual dubbing and ciphering on March 23rd.

Budget for the story was sufficient to allow six Mutt costumes to be built. Designed by Jim Acheson, they were built by the freelance Alastair Bowtell prop building company. Each Mutt had a wire-framed, fabric-covered body with a heavy metal ring worn at the waist by the actor to support the weight of the hook-on abdomen section. The hands were latex rubber with a separate rubber mouthpiece which fastened to the actor's own cheeks with clothes pegs. Thus by flexing his jaw the actor could make the Mutt's mandibles twitch.

Make-up provided the intermediate stage mutation appliances which ranged from simple painted-on areas of discoloured skin to full latex vertebra sections. The intermediate Mutt claw arms were stock from Visual Effects.

Miniatures and model shooting were the sole preserve of Visual Effects in this story. John Horton designed Skybase as a false-perspective model; that is, one of the two main spherical sections was smaller than the other and the connecting tube between them tapered towards the smaller sphere. The object of this exercise was to make the three foot long Skybase model seem a much vaster space platform when shot on film than it would have appeared as a single-scale miniature.

The space docking bay for the 'Hyperion' ship was a separate model stage hung upside down so that the wires supporting the space vessels would not be so easily detected by the viewer when the film was replayed 'the right way up'.

The planet Solos, as seen from space, was a glass painting mounted on a caption easel. Simple backlighting changed the perception of the planet seen in daylight or night-time.

Lighting was a key component to this show's visual quality, providing the bright splashes of colour the sets, costumes and exteriors could not (see pages "63-09" and "63-10"). A need was felt for startling colour contrasts, otherwise 'The Mutants' might run the risk of looking too drab, and thus potentially boring to the audience. In the main, the lighting was provided by the huge studio arc lamps or the portable location lights, both of which could be fitted with various filters to achieve the colour balances required.

Special Sound for this story was credited entirely to Brian Hodgson, although in reality he shared the task with the man inheriting his nine-year-old seat, Dick Mills. Perhaps fittingly, 'The Mutants' marked the final regular use of the full 'Doctor Who' closing theme music which Hodgson had helped Delia Derbyshire to realise back in 1963. For subsequent shows the 'middle section' of the music would usually be absent.

It was also very appropriate that episode one opened with a re-use of the 'sonic wind' sound effect which Hodgson had originally created for 'The Daleks' (Serial "B") early in the first season. By coincidence, the working title of that first Terry Nation story had been 'The Mutants' and it had also been directed, in part, by Christopher Barry.

Another member of the 'old guard' returning to the show for 'The Mutants' was Tristram Cary, the 'musique concrete' composer who had provided the incidental music for 'The Daleks' and a number of other Hartnell stories. As with 'The Daleks', his compositions were not so much music more sequences of mood effects, but realised this time with synthesisers and digital equipment rather than sound generators and 'wobulators'.

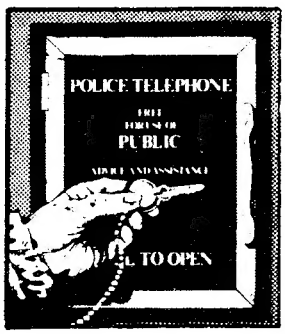
Incidental music for the final episode of the story was provided not by Tristram Cary but by Dudley Simpson, although this was very much in the same style as Cary's work for the earlier episodes.

Set Designer Jeremy Bear fell back on the old technique - used, for example, by Barry Newbery on 'Marco Polo' (Serial "D") - of constructing a whole series of 'floater sets' for Skybase - i.e. sets which could be moved around the studio floor, jigsawed in with other mobile 'floater' sections and re-dressed to look like completely different rooms or corridors. This kept the cost of the sets to a minimum and also saved valuable time.

The most complicated routine to do involving sets was Varan's attack on Skybase in episode four. All these sequences, plus those in Varan's village, were done at the end of episode three's recording day, for artists' contractual reasons. The final shot of Varan drifting away into space was a mixed-feed CSO picture involving the actor being suspended on wires from the studio roof.

The bulk of the radiation cave set, where the Doctor discovers the crystal that will ultimately transform Ky, was a vignette model carefully positioned between the camera and the actors. Through careful lighting and CSO overlays onto white walls the 'joins' were almost invisible.

To make Ky's transformation thrashings seem even more convulsive, as he grabs the crystal in episode six, the sequence was shot onto video disc and re-played onto the master tape at faster speed.



PRODUCTION CREDITS

Stephen James Walker

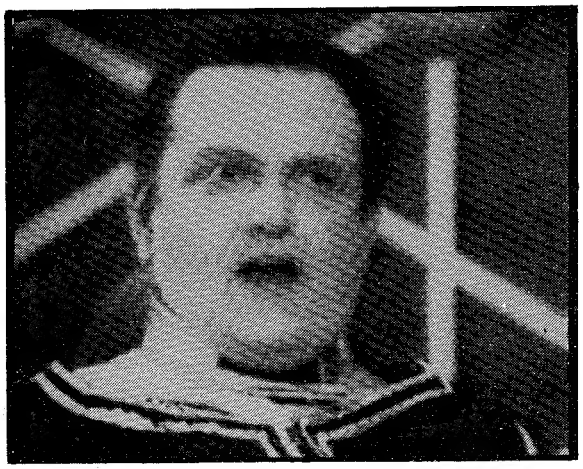
SERIAL "NNN" — COLOUR

PART 1	Duration 24' 25"	8th. April 1972
PART 2	Duration 24' 24"	15th. April 1972
PART 3	Duration 24' 32"	22nd. April 1972
PART 4	Duration 24' 00"	29th. April 1972
PART 5	Duration 24' 37"	6th. May 1972
PART 6	Duration 23' 43"	13th. May 1972

CAST

STARRING:
Doctor Who.....Jon Pertwee
Jo Grant.....Katy Manning

FEATURING:



Marshal.....Paul Whitsun-Jones
Stubbs.....Christopher Coll
Cotton.....Rick James
Varan.....James Mellor
Ky.....Garrick Hagon
Administrator.....Geoffrey Palmer
Jaeger.....George Pravda
Sondergaard.....John Hollis
Investigator.....Peter Howell

WITH:
Varan's son.....Jonathan Sherwood
Old man.....David J. Grahame
Skybase guards.....Astley Harvey, Keith Ashley
Ronald Gough, David Waterman
Terry Walsh, Dave Carter
Dennis Plenty, Ali Baba
Ron Tingley
Solonians.....Vic Taylor, Brychan Powell
Peter Whitaker, Reg Cranfield
Bodyguard.....Steven Ismay
Overlord guard.....Terry Walsh
Exit guard.....Joe Santo
Mutants/Mutts.....John Scott Martin, Mike Torres
Eddie Sommer, Laurie Goode
Nick Thompson Hill, Mike Mungaven
Ricky Newby, Bill Gosling
Tannoy voice.....Garrick Hagon
Old man.....Sidney Johnson
Guard warriors.....David Arlen, Ian Elliott
Solos guards.....Terry Walsh, Geoff Witherick
Roy Pearce, Dennis Plenty
Brian Nolan
Voice.....John Hollis
Warriors.....Derek Chafer, Alex Hood
Terry Sartain
Skybase guard leader.....Martin Taylor
Solos guard leader.....Damon Sanders
Earth Control guards.....Gary Dean, Keith Urry
Mick Urry, Barry Hooper
Advisors.....Ken Nazarin, Evan Ross
Extra in film sequence.....Joe Santo

TECHNICAL CREDITS

Production Assistants.....Fiona Cumming
Chris D'Oyly-John
Assistant Floor Manager.....Sue Hedden
Assistant.....Joan Elliott
Technical Manager 1.....Frank Cresswell
Technical Manager 2.....Clive Leighton
Sound Supervisor.....Tony Millier
Grams Operator.....Gordon Phillipson
Crew.....No. 13
Vision Mixer.....Mike Turner
Floor Assistant.....Philip Hill
Stunt technical advisor.....Terry Walsh
Film Cameraman.....Fred Hamilton
Film Editor.....Dave King
Film Sound.....Dick Manton
Visual Effects.....John Horton
Costumes.....James Acheson
Make-up.....Joan Barrett
Incidental Music.....Tristram Cary, Dudley Simpson
Special Sound.....Brian Hodgson, Dick Mills
Script Editor.....Terrance Dicks
Designer.....Jeremy Bear
Producer.....Barry Letts

DIRECTOR:

CHRISTOPHER BARRY

BBCtv 1972